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energy emitted by the active driven antenna element via electromagnetic mutual coupling;  
 wherein the network of mechanical switches are further configured to selectively reconfigure the array of selectively reconfigurable pixels such that a first region of the array of selectively reconfigurable pixels comprising a first subset of reconfigurable pixels is in resonance with the active driven antenna element.

2. The reconfigurable antenna of claim 1, wherein a geometry of the array is reconfigurable.

3. The reconfigurable antenna of claim 1, wherein the mechanical switches comprise microelectromechanical switches.

4. The reconfigurable antenna of claim 1, wherein the reconfigurable antenna is configured to operate at frequencies between 4 GHz and 6 GHz.

5. The reconfigurable antenna of claim 1 further comprising:

highly resistive bias lines configured to drive one or more microelectromechanical switches of the network of microelectromechanical switches by the control voltages.

6. The reconfigurable antenna of claim 1, wherein the array of selectively reconfigurable pixels are arranged in a grid pattern.

7. The reconfigurable antenna of claim 1, wherein the reconfigurable antenna is configured to operate in a plurality of operating modes, each operating mode corresponding to a particular configuration of the array of selectively reconfigurable pixels.

8. The reconfigurable antenna of claim 1, wherein the reconfigurable antenna is configured to operate at a plurality of beam steering angles based at least in part on the configuration of the array of selectively reconfigurable pixels.

9. The reconfigurable antenna of claim 8, wherein the plurality of beam steering angles include at least one of beam steering angle between  $\theta_s = -60^\circ$  and  $60^\circ$ .

10. The reconfigurable antenna of claim 1, wherein the reconfigurable antenna is configured to operate at a Linear, Circular, or Elliptical polarization based at least in part on the configuration of the array of selectively reconfigurable pixels.

11. The reconfigurable antenna of claim 1, wherein the reconfigurable antenna includes a plurality of antenna array elements, each antenna array element including at least one of the active driven antenna element and the parasitic element.

12. A reconfigurable antenna comprising a plurality of antenna array elements, each antenna array element comprising:

an active driven antenna element configured to emit an electromagnetic field; and

a parasitic element disposed over the active driven antenna element, the parasitic element comprising an array of selectively reconfigurable pixels configured to couple with the electromagnetic field emitted by the active driven antenna element via electromagnetic mutual coupling.

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pling and a network of mechanical switches configured to selectively reconfigure the array of selectively reconfigurable pixels based on one or more applied control voltages by physically coupling a plurality of reconfigurable pixels of the array of selectively reconfigurable pixels,

wherein the network of mechanical switches are further configured to selectively reconfigure the array of selectively reconfigurable pixels such that a first region of the array of selectively reconfigurable pixels comprising a first subset of reconfigurable pixels is in resonance with the active driven antenna element.

13. The reconfigurable antenna of claim 12, wherein the antenna array elements are arranged in a linear array configuration.

14. The reconfigurable antenna of claim 12, wherein the reconfigurable antenna is configured to operate at frequencies between 4 GHz and 6 GHz.

15. The reconfigurable antenna of claim 12 further comprising:

an aperture coupled feed line configured to feed the active driven antenna element.

16. The reconfigurable antenna of claim 12, wherein the array of selectively reconfigurable pixels are arranged in a grid pattern.

17. The reconfigurable antenna of claim 12, wherein a foam substrate is configured to separate the parasitic element from the active driven antenna element.

18. The reconfigurable antenna of claim 12, wherein the reconfigurable antenna is configured to operate at a plurality of beam steering angles based at least in part on the configuration of the array of selectively reconfigurable pixels.

19. The reconfigurable antenna of claim 18, wherein the plurality of beam steering angles include at least one of beam steering angle between  $\theta_s = -60^\circ$  and  $60^\circ$ .

20. The reconfigurable antenna of claim 12, wherein the reconfigurable antenna is configured to operate at a Linear, Circular, or Elliptical polarization based at least in part on the configuration of the parasitic element.

21. The reconfigurable antenna of claim 1, wherein the network of mechanical switches are further configured to selectively reconfigure the array of selectively reconfigurable pixels such that a second region of the array of selectively reconfigurable pixels comprising a second subset of reconfigurable pixels is not in resonance with the active driven antenna element.

22. The reconfigurable antenna of claim 12, wherein the network of mechanical switches are further configured to selectively reconfigure the array of selectively reconfigurable pixels such that a second region of the array of selectively reconfigurable pixels comprising a second subset of reconfigurable pixels is not in resonance with the active driven antenna element.

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